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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/766,656	01/23/2001	Norio Fukasawa	980233B	1144

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EXAMINER

GRAYBILL, DAVID E

ART UNIT	PAPER NUMBER
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2827

DATE MAILED: 06/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/766,656

Applicant(s)

FUKASAWA ET AL.

Examiner

David E Graybill

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 November 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 98-120 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 98-120 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 09/029,608.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

Applicant is advised that should claim 106 be found allowable, claim 111 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim.

See MPEP § 706.03(k).

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 113-115 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.

The non-described subject matter is the claim 113 limitation, "a film having a detachability with respect to the sealing resin," and the claim 114 limitation, "a plate member

having a detachability with respect to the sealing resin." To further clarify, there is no support for the claim 113 limitation in the embodiment of claim 111, and there is no support for either limitation in the original disclosure of any of the priority documents.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 104-106 and 120 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 104 the limitation, "a resin sealing step of loading a substrate on which semiconductor elements having external connection electrodes formed on surfaces of the semiconductor elements onto a mold" appears to be grammatically incorrect and is unclear.

In claim 120 there is insufficient literal antecedent basis for the language "the connection electrodes."

Claim 120 has not been rejected over the prior art because, in light of the 35 U.S.C. 112 rejection supra, there is a great deal of confusion and uncertainty as to the proper

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interpretation of the limitations of the claim; hence, it is not proper to reject the claim on the basis of prior art. As stated in *In re Steele*, 305 F.2d 859, 134 USPQ 292 (CCPA 1962), a rejection should not be based on considerable speculation about the meaning of terms employed in a claim or assumptions that must be made as to the scope of the claims. See also MPEP 2173.06.

In the rejections *infra*, reference labels are generally recited only for the first recitation of identical elements.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 98-103 and 110 are rejected under 35 U.S.C. 102(b) as being anticipated by Kihira (JP8-64725).

In the figures, and English abstracts and translations, Kihira teaches a method for fabricating a semiconductor device

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comprising a resin sealing step of loading a substrate 11 on which semiconductor elements 13 having protruding electrodes 16 are formed to a mold 21, supplying a sealing resin 19 to positions of the protruding electrodes so as to form a first resin layer 19a which seals the protruding electrodes and the substrate, a protruding electrode exposing step of exposing at least ends of the protruding electrodes from the first resin layer [0044-0047], and a separating step of cutting the substrate together with the first resin layer so that the semiconductor elements are separated from each other [0052], wherein the sealing resin used in the resin sealing step has an amount which causes the resin layer to have a height approximately equal to that of the protruding electrodes [0047], wherein the resin sealing step uses a sheet-shaped resin as the sealing resin, wherein the protruding electrode exposing step uses means for exposing the ends thereof from the resin layer, said means being at least one of a laser beam projection, excimer laser, etching, mechanical polishing "grinding," [0044-0045] and blasting, wherein the sealing resin used in the resin sealing step comprises a plurality of sealing resins 19a, 19b having different characteristics such as different locations and different shapes, wherein a second resin layer 19b is formed so as to cover a back surface of the substrate after or at

the same time as the first resin layer is formed, in the resin sealing step, on the surface of the substrate on which the protruding electrodes are arranged, wherein the resin sealing step disposes a film 19a between the substrate and the mold, and wherein said protruding electrode exposing step is conducted by pressing "injection pressure" [0020 and 0044] and "grinding" said seal resin layer.

Claims 104 and 105 are rejected under 35 U.S.C. 102(b) as being anticipated by Azuma (JP7-45649).

In the figures, and English abstracts and translation, Azuma teaches a method for fabricating semiconductor devices comprising a resin sealing step of loading a substrate 21 on which semiconductor elements 11 having external connection electrodes 14 formed on surfaces of the semiconductor elements onto a mold "metal mold" and supplying a resin 12 to the surfaces so that a resin layer 12 sealing the external connection electrodes and the substrate is formed, and a separating step of cutting the substrate together with the resin layer in positions 22 in which the external connection electrodes are formed, so that the semiconductor elements are separated from each other, and wherein the external connection electrodes are commonly included by adjacent ones of

the semiconductor elements before the separating step is executed.

Claims 108 and 109 are rejected under 35 U.S.C. 102(e) as being anticipated by Brooks (5824569).

At column 2, line 29 to column 5, line 22, Brooks teaches a method for fabricating a semiconductor device, comprising the steps of forming a groove 106 in a predetermined region of a semiconductor wafer 102, sealing 110 a surface of said semiconductor wafer including said groove and a sidewall surface of a protruding electrode 100 formed on said semiconductor wafer, and dividing said semiconductor wafer on said groove into plural semiconductor devices, forming two parallel grooves 106 on a predetermined region of a semiconductor wafer, sealing a surface of said semiconductor wafer including said grooves and a sidewall surface of a protruding electrode formed on said semiconductor wafer, and dividing said semiconductor wafer at a position between said grooves into plural semiconductor devices.

Claims 106 and 111-116 are rejected under 35 U.S.C. 102(e) as being anticipated by Ohta (5641997).

At column 5, line 15 to column 7, line 19, column 9, lines 23-34, column 11, lines 15-63, column 12, line 51 to column 13, line 26, and column 54, lines 50-67, Ohta teaches a method for

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fabricating a semiconductor device comprising a resin sealing step of loading a wiring board having a flexible member on which a semiconductor element and leads are arranged onto a mold and supplying sealing resin to the semiconductor element so as to seal the semiconductor element, and a protruding electrode forming step of forming protruding electrodes so as to be electrically connected to the leads formed on the wiring board, the resin sealing step using a compression molding process, a resin sealing step of loading a wiring board having a flexible member 106 on which a semiconductor element 107 and leads 113 are arranged onto a mold 401 and supplying sealing resin 109 to the semiconductor element so as to seal the semiconductor element, and a protruding electrode forming step of forming protruding electrodes 112 so as to be electrically connected to the leads formed on the wiring board, the resin sealing step uses a compression-molding process, wherein a frame "frame 7 (polyimide film carrier)" having a cavity portion in which the semiconductor element is accommodated is provided when the wiring board is formed, wherein a film 115 having a detachability with respect to the sealing resin and the mold is provided in a position of the mold facing the wiring board, so that the mold contacts the sealing resin through the film, wherein a plate member 15 having a detachability with

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respect to the sealing resin and the mold is provided in a position of the mold facing the wiring board, so that the mold contacts the sealing resin through the plate member, wherein the plate member is formed of a substance having a heat radiating performance, wherein an excess resin removing mechanism "air vent" is provided in the mold used in the resin sealing step, and wherein the excess resin removing mechanism removes excess resin and air and thereby inherently controls a pressure applied to the sealing resin in the mold.

To further clarify the teaching of a film and a plate member having a detachability with respect to the sealing resin, it is noted that it is inherent that the film and plate have the ability to be separated from the sealing resin by physical or chemical processes.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a),

the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary.

Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 111 and 117-119 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Ohta (5641997) and Sugano (5334875).

As cited supra, Ohta teaches a method for fabricating a semiconductor device comprising a resin sealing step of loading a wiring board having a flexible member 106 on which a semiconductor element 107 and leads 113 are arranged onto a mold 401 and supplying sealing resin 109 to the semiconductor element so as to seal the semiconductor element and a protruding electrode forming step of forming protruding electrodes 113 so as to be electrically connected to the leads formed on the wiring board, the resin sealing step uses a compression-molding process, and wherein extending portions 113 are formed to the

wiring board so that the extending portions laterally extend from a position in which the semiconductor element is placed.

However, Ohta does not appear to explicitly teach a bending step of bending the extending portions is executed after the resin sealing step is completed and before the protruding electrode forming step is executed, connection electrodes to be connected to the semiconductor element are formed to ends of the extending portions, and an element connecting step of connecting the semiconductor element and the connection electrodes is executed after the bending step is carried out.

Nonetheless, at column 19, line 39 to column 22, line 56, Sugano teaches a bending step of bending extending portions 318 is executed after a resin 322 sealing step is completed and before a protruding electrode 338 forming step is executed, connection electrodes 334 to be connected to the semiconductor element are formed to ends of the extending portions, and an element connecting step of connecting the semiconductor element and the connection electrodes is executed after the bending step is carried out. Moreover, it would have been obvious to combine the process of Sugano with the process of Ohta because it would facilitate semiconductor element connection.

Also, the combination of Ohta and Sugano does not appear to explicitly teach the bending step of bending the extending

portions is carried out before the resin sealing step is executed, and the resin sealing step and the protruding electrode forming step are carried out after the bending step is executed.

Regardless, it would have been an obvious matter of design choice bounded by well known manufacturing constraints and ascertainable by routine experimentation and optimization to choose the particular claimed sequence because applicant has not disclosed that the limitation is for a particular unobvious purpose, produces an unexpected result, or is otherwise critical. Moreover, it is well established that, in a well known process, the order of performing process steps is prima facie obvious in the absence of new or unexpected results. Ex parte Rubin 128 USPQ (PO BdPatApp 1959).

Claim 118 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohta and Sugano as applied to claim 118, and further in combination with Walker (5288943).

The combination of Ohta and Sugano does not appear to explicitly teach the bending step of bending the extending portions is carried out before the resin sealing step is executed, and the resin sealing step and the protruding electrode forming step are carried out after the bending step is executed.

Nevertheless, at column 3, line 3 and column 4, lines 8-29, Walker teaches a bending step of bending extending portions 24 is carried out before a resin sealing step "molding a plastic case" is executed, and the resin sealing step is carried out after the bending step is executed. Furthermore, it would have been obvious to combine the process of Walker with the process of the combination of Ohta and Sugano because it would reduce contamination.

The art made of record and not applied to the rejection is considered pertinent to applicant's disclosure. It is cited primarily to show inventions similar to the instant invention.

The art made of record and not applied to the rejection is considered pertinent to applicant's disclosure. It is cited primarily to show inventions similar to the instant invention.

Any telephone inquiry of a general nature or relating to the status (MPEP 203.08) of this application or proceeding should be directed to Group 2800 Customer Service whose telephone number is 703-306-3329.

Any telephone inquiry concerning this communication or earlier communications from the examiner should be directed to David E. Graybill at (703) 308-2947. Regular office hours: Monday through Friday, 8:30 a.m. to 6:00 p.m.

The fax phone number for group 2800 is 703/3087724.

David E. Graybill
Primary Examiner

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D.G.
13-Jun-03